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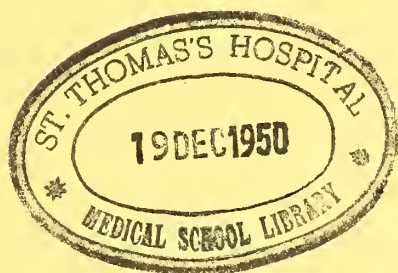
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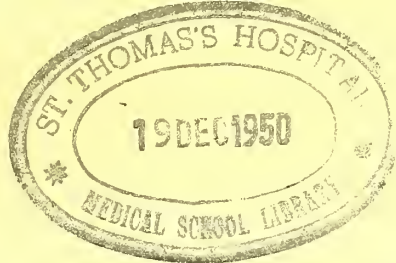
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For J & Green Esrs
with the respects
of the author

AN ACCOUNT OF THE MODE
OF PERFORMING THE
LATERAL OPERATION OF LITHOTOMY.
WITH ILLUSTRATIONS.

LONDON :
Printed by A. & R. Spottiswoode,
New-Street-Square.



20.4.3.

AN ACCOUNT
OF
THE MODE OF PERFORMING
THE
LATERAL OPERATION OF LITHOTOMY.
WITH
ILLUSTRATIONS.

BY EDWARD STANLEY,

ASSISTANT SURGEON, AND LECTURER ON ANATOMY AND PHYSIOLOGY, AT
SAINT BARTHOLOMEW'S HOSPITAL.

LONDON:

PRINTED FOR LONGMAN, REES, ORME, BROWN, AND GREEN,
PATERNOSTER-ROW.

1829.



TO

THOMAS BLIZARD, ESQ. F.R.S.L.&E.

LATE SURGEON TO THE LONDON HOSPITAL,

THE FOLLOWING PAGES

ARE DEDICATED,

WITH EVERY FEELING OF RESPECT AND AFFECTION,

BY HIS NEPHEW,

EDWARD STANLEY.

Lincoln's Inn Fields,

September, 1829.



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P R E F A C E.

RESPECTING the operation of Lithotomy, Mr. Cheselden observes, “ If I have any reputation in this way, I have earned it
“ dearly ; for no one ever endured more anxiety and sickness
“ before an operation ; yet, from the time I began to operate,
“ all uneasiness ceased ; and if I have had better success than
“ some others, I do not impute it to more knowledge, but to
“ the happiness of a mind that was never ruffled or discon-
“ certed, and a hand that never trembled during any operation.”

If these were the feelings of Mr. Cheselden, with his knowledge and experience, at each repetition of the operation for the stone, we are not to be surprised at the anxiety which most individuals endure the first time they perform it. In endeavouring to be serviceable on such an occasion, I have experienced the want of a simple, yet sufficiently detailed account of the mode of performing the operation, unencumbered by critical or historical matter. Such an account it has been my object to supply, and with the hope of having increased its utility, I have added some illustrations of the parts concerned in the operation, in their healthy and diseased states.

ACCOUNT
OF
THE LATERAL OPERATION.

SECTION I.

ON THE MODE OF PERFORMING THE OPERATION.

THE design of the operation is to form a direct passage from the perineum, through the left side of the prostate gland, to the bladder.

Design of
the oper-
ation.

The operation is accomplished by a free incision of the skin and subjacent fat ; by dividing the transversalis muscle, and a part of the triangular ligament ; by opening the urethra at its membranous portion, and continuing the incision through the left side of the prostate.

How to be
accomplish-
ed.

About three hours before the operation, warm water should be freely injected into the rectum. In an instance where this had been negligently done, the gut was wounded, and much faecal matter escaped through the outward incision. That the

Points of at-
tention im-
mediately
before the
operation.

bladder should, at the time of the operation, contain some urine, is advantageous on several accounts: it lessens the risk of wounding any other part of the bladder than its neck; it gives to the operator an assurance that his knife or gorget has entered the bladder, by the flow of urine then taking place through the wound; and it may favourably influence the seizure of the stone by the forceps. But on this point, Cheselden has recorded the following observations:—"Here I must take notice, it is very convenient to have the bladder empty of urine before the operation; for if there is any quantity to flow out of the bladder at the passing of the gorget, the bladder does not contract, but collapses into folds, which makes it difficult to lay hold of the stone without hurting the bladder: but if the bladder is contracted, it is so easy to lay hold of it that I have never been delayed one moment, unless the stone was very small."*

That the stone should not be lodged in a sort of recess, between folds of the bladder,—that it should be perfectly free in the cavity of the bladder, is obviously desirable; but whether this will be more likely to happen from the bladder being, at the time of the operation, full or empty, is a point upon which the best authorities may not agree. When

* A short historical account of cutting for the stone, appended to the *Anatomy of the Human Body*, 1768.

the irritability of the bladder will not permit it to retain any urine, its opposite sides will be, in some situations, in contact ; and in others, applied upon the stone : under these circumstances, and especially if the stone be small, there may be some risk of extending the incision of the bladder beyond its proper limits.

I have not thought it necessary to describe the application of the bandages, but it may be well to notice the importance of this being properly done. An operator, without the advantage of experienced assistants, must himself ascertain that the bandages are applied in a manner to prevent the possibility of their yielding. It is better that the bandages should be applied before the staff is introduced, that there may be no risk of changing the situation of the point of the staff, after it has touched the stone.

The straight part of the staff should be held perpendicularly : its curved part should not be pressed in one or other direction against the sides of the urethra. The assistant receiving the staff thus adjusted, must hold it firmly, and without changing its position in the slightest degree.

The pressure of the curved part of the staff upwards is objectionable, as it may lead to the incisions being made into the narrower part of the space beneath the arch of the pubes. To the pressure of the staff downwards, the objections are,

that it may have the effect of withdrawing the point of the instrument from the bladder, and of approximating the bladder and urethra to the rectum. In an instance where the assistant pressed the staff downwards, the rectum was wounded by the scalpel in the first stage of the operation ; and, in the young subject, the risk of such an occurrence will be greater, on account of the small size and soft texture of the prostate gland. The assistant holding the staff is usually on the right side of the patient ; but an advantage may result from his being on the opposite side : it gives him the command of the staff with his right hand. That the staff should be held steadily, in the position in which it is received from the operator, is indispensable. The least movement of the staff to either side, by altering the direction of its groove, must embarrass the operator ; as he will then cut, first on one side of it, then on the other, and in this way repeat the incisions of the urethra in many places before the groove is fairly penetrated.

Position of
the patient.

Besides the assistant holding the staff, two other assistants, at the sides of the patient, by firmly grasping his knees and feet, must resist the efforts he will make to raise and approximate his knees, much to the embarrassment of the operator. Another assistant should be placed at the patient's shoulders. The pelvis, being brought to the edge of the table, is to be so adjusted that the anterior superior spines of the ilia will be in a horizontal

line, and it is to be kept in this position until the operation is completed.

Before the incisions are commenced, the operator may direct his attention to the situation of the tuberosity and ramus of the left ischium ; then, by recollecting that the corpus spongiosum is directly behind the raphé of the perineum, he can mark with precision the triangular space between the corpus spongiosum and the crus penis, through which the incisions are to be directed to the membranous portion of the urethra.

Attention to
points of
anatomy.

The first incision is to be commenced an inch and a quarter above the anus, and a little more than a quarter of an inch to the left of the raphé, and is to be continued obliquely, outwards and downwards, to the extent of about three inches, towards the tuberosity of the ischium. The thumb and fore-finger placed against the perineum will mark the points where the incision should begin and terminate.*

First inci-
sion.

The first incision should be through the skin, subjacent fat, and tendinous fibres. Its length should never be much less than three inches ; and, in the case of an unusually large stone, it must be extended towards the tuber ischii even to four inches. Its exact line should be one third from the tuberosity and ramus of the ischium, and two thirds from the anus. Any deviation

* It is necessary to observe, that this, with the other directions for the operation, is designed for the adult.

from this had better be by an approximation of the incision to the tuberosity, than to the anus.

In a thin person, a scalpel may be plunged through the integuments directly into the membranous portion of the urethra; but, with a considerable depth of fat in the perineum, this is difficult, and in attempting it the bulb will be almost certainly divided, its artery wounded, and the urethra penetrated anterior to its membranous portion.

Subsequent
incisions.

With the left fore-finger in the wound, the incisions are to be continued to the membranous portion of the urethra. These incisions, being made in the triangular space between the corpus spongiosum and the crus penis, will divide the transversalis perinei muscle, branches of the perineal artery, a small part of the triangular ligament, and the front edge of the levator ani muscle.

Opening the
urethra.

The left fore-finger and the scalpel moving together towards the membranous portion of the urethra, and the staff being felt, with the edge of the scalpel turned upwards, a slit in the urethra is then to be made, to the extent of half an inch at least.* The nail of the fore-finger passing by the side of the scalpel into the groove of the staff, is to remain there as a

* It is here presumed, that a single-edged scalpel has been used for the first and subsequent incisions. Then, to secure a free incision of the urethra, the edge of the scalpel must be turned upwards; but with a double-edged scalpel this movement would be unnecessary.

guide to the beak of the knife or gorget, whichever instrument may be used to complete the operation.

That there may be a certainty of opening the urethra in its membranous portion, let it be recollected, that the scalpel must enter the staff directly under the symphysis pubis : of the importance of this rule there can be no doubt. Mr. Blizard, —the dexterity of whose numerous operations at the London Hospital has been acknowledged in the strongest terms by all who witnessed them,—attributes his success to the rule of invariably penetrating the urethra in its membranous portion. Mr. Martineau, who has recorded the result of his great experience, states : “ I introduce the point of the knife into it (the groove) as low down as I can, and cut the membranous part of the urethra.”* The nearer to the prostate gland the urethra is opened the better, as it lessens the risk of wounding the bulb or its artery.

As soon as the urethra is opened, urine may flow through the wound : this must be recollected ; otherwise it might be supposed the bladder had been opened when the incisions have not reached the prostate.

The knife being conducted along the left fore-finger to the staff, its beak is to be moved a little within the groove, to

Completion of the operation by a knife narrow-bladed and beaked.

* Med. Chir. Trans. vol. xi.

ascertain that the two instruments are in contact. The staff, then taken in the left hand, is to be held firmly and without any change of its position, whilst, with the right, the knife is urged slowly onwards to the bladder. Its entrance into the bladder will be indicated by the sudden removal of resistance to its progress, and, probably, by a gush of urine. The incision of the prostate is yet to be adequately enlarged in withdrawing the knife from the bladder, and at the same time directing its blade outwards and downwards. This incision through the left side of the prostate will correspond with the incision of the outward parts, and it should be of sufficient extent to permit the easy passage of the finger into the bladder.

The knife should be held lightly as it is withdrawn from the bladder, that the operator, sensible of the resistance it meets, may judge accurately of its progress through the prostate. In withdrawing the knife, attention should be given to the position of its handle, which may be inclined towards the left ischium, but not towards the right, as the blade would then be directed towards the pudendal artery.

Completion
of the oper-
ation by a
gorget.

The gorget is to be conducted to the bladder in the same manner as the knife. The management of the staff is the same with the gorget as with the knife. Since the gorget, by the width of its blade, has adequately divided the prostate in its

progress to the bladder, it is then to be simply withdrawn preparatory to the introduction of the forceps.

The scalpel, with which the first and the subsequent incisions have been made, is used by some operators for the incision of the prostate. Thus will the operation be simplified; but it may be doubted whether a common scalpel, even by an experienced hand, will be conducted along the groove of the staff with the same precision as an instrument to the end of which a beak is appended.

Completion of the operation by a scalpel.

The foregoing directions imply that, whether a knife or a gorget be used for the incision of the prostate, the operator, taking the staff in his left hand, is not to change its position until he withdraws it from the bladder. But there are other methods. The handle of the staff may be depressed, in order that, by the elevation of its other extremity, any risk of injuring the lower part of the bladder may be avoided; and for this position of the staff, a corresponding depression of the handle of the knife or gorget will be required to secure the continued adaptation of the two instruments. Or, the staff may be left in the hand of the assistant until the incision of the prostate is completed. The operator can then pass his left fore-finger along the side of the knife, whilst he is dividing the prostate, for the purpose of ascertaining when the incision of the gland is sufficient to permit the easy passage of the finger into the bladder.

On the position of the staff during the incision of the prostate.

For the reason that the depression of the staff and the adaptation of the beak of the knife or gorget to its groove require a consent of action between the two hands of the operator, which experience only can give him, it may seem preferable to leave the staff in the hand of the assistant; but as a general rule, it is better that the operator should depend entirely upon himself for holding the staff with the requisite steadiness.

Introduction
of the for-
ceps.

The knife or the gorget having been withdrawn, the staff is to be taken in the right hand, and the left fore-finger passed along it into the bladder. The staff is then to be withdrawn, and it is to be ascertained by the finger to what part of the bladder the forceps should be directed, that they may immediately touch the stone. On withdrawing the finger, the forceps, with their blades closed, are to be passed slowly through the wound, and inclined upwards as they approach the bladder, carefully observing when they enter its cavity.

Upon the foregoing plan, the staff will be the conductor of the finger into the bladder, and the finger the conductor of the forceps. The introduction of the finger is useful to ascertain the situation of the stone, and, by separating the sides of the incision in the prostate, to facilitate the passage of the forceps. By allowing the staff to remain in the bladder until the finger has entered its cavity, the beaked or probe-pointed knife can be readily conducted to the bladder, for the purpose of

enlarging the incision of the prostate, should this have been inadequately made : and if, from an unusual firmness of the prostate, the sides of the incision through it do not readily yield, much difficulty may be experienced in discovering the passage to the bladder, when the staff has been withdrawn, and its aid, as a conductor of the finger, is thereby lost. So many sources of difficulty are avoided by a strict adherence to the rule of not withdrawing the staff untill the finger has fairly entered the bladder, that it cannot be pressed too strongly upon the attention of the operator.

When the blades of the forceps happen to be passed to the upper or to the under surface of the stone, it may be seized directly they are opened. But when the forceps touch the stone only on its anterior surface, it is necessary, in opening the blades, to advance them a little, otherwise, in separating, they will recede from the stone.

Extraction
of the stone.

When the first attempt to seize the stone has failed, the forceps should be directly withdrawn, and the finger introduced into the bladder, to change the situation and position of the stone. But the finger may not reach the stone : a scoop or other instrument must then be introduced, to dislodge the stone from its unfavourable situation ; and it is scarcely necessary to mention the importance of introducing into the bladder but few instruments, and these as gently as possible. A stone lodged

in the lower part of the bladder has in some instances been raised, and its position changed, by the finger introduced into the rectum.

But, to meet the various difficulties which may occur in extracting the stone, rules will avail but little, so much must depend on the discretion and the dexterity of the operator, in selecting the method which may be suited to the circumstances of the individual case. In many instances, the seizure of the stone is resisted by the forcible contraction of the bladder upon it. It has happened that a stone which, from the sensation communicated through the sound, was believed to be loose in the bladder, has been found partly lodged within a distinct cyst or within the orifice of the ureter. Under either of these circumstances, its extraction may be difficult. There may be an adhesion of the stone to the bladder*, or a sort of hour-glass contraction of the bladder, separating its cavity into two compartments.† In most of these cases, the peculiarity in the situation of the stone is discovered in the progress of the operation. Perhaps, the entrance of the gorget into the bladder may be impeded by the stone being fixed near to, or within,

* In admitting the possibility of the adhesion of a stone to the bladder, I must state, that I have never seen more than an irregular deposition, or a thin layer of calculous matter, which was adherent, either to the mucous membrane in a diseased state, or to a soft fungous excrescence which had arisen from it.

† Specimens of this state of the bladder are to be seen in the Hunterian Collection.

the prostate, or, on attempting to seize the stone, it may then be discovered to be partly within a cyst, or partly within the ureter. Some peculiarity, however, in the situation of the stone might be suspected from the occurrence of any unusual circumstance in sounding the patient. Some years since, I operated upon a boy, in whom the stone could not be always discovered, and it was doubtful whether the sound touched the stone before or after its entrance into the bladder. The membranous portion of the urethra was opened. A beaked knife was then passed slowly along the groove of the staff to the stone, which was lodged in the prostate gland.

Whether the operation has been completed by a knife or by a gorget, some resistance to the progress of the stone through the wound may be expected. This resistance may be in the prostate or in the external parts; but in either case, it will yield to the skilful use of the forceps, provided that the incisions have been properly made, that the stone is not unusually large, and that the prostate has undergone no change in its structure.

The skilful management of the forceps consists in pressing their blades gently against the sides of the wound, first in one direction, then in another, but especially downwards*, and in drawing them outwards slowly, that time may be allowed

* This will be towards the wider part of the space between the rami of the ischia.

for the yielding of the surrounding parts. Laceration, or severe contusion, of the sides of the wound will probably be followed by suppuration, which, by spreading extensively through the surrounding cellular tissue, may be destructive of life. With these circumstances in his mind, the operator must judge to what extent the effort to extract the stone may be safely persevered in, and when he ought to desist, for the purpose of enlarging the wound with the knife in the situation where there is the most resistance.

When the resistance to the progress of the stone is in the prostate, although the left side of the gland has been divided to the usual extent, it will be better to cut into its right side than to extend the incision of the left at the risk of wounding the pudendal artery, or of cutting the coats of the bladder beyond its neck.*

When the resistance to the progress of the stone is in the external parts, the incision of these must be enlarged towards the tuberosity of the left ischium.

The extraction of the stone must be directly followed by the introduction of the finger into the bladder, for the purpose of examining every part of its internal surface; and this must

* The thin coats of the bladder can scarcely resist the extraction of the stone, and from the incision of the bladder beyond its neck, there will be the danger of infiltration of urine into the pelvis, and of injury to the ureter, so close to the neck of the bladder is its termination in some subjects.

be carefully done, as there may be a second stone not readily discoverable in consequence of its being lodged in a recess of the bladder at its fundus or elsewhere.

And it is necessary to examine the surface of the stone. A particle of it may have been chipped off, and retained either in the tract of the wound or in the bladder. Unless it can be discovered in the wound, and thence dislodged by the end of the finger, a stream of warm water must be directed with a good syringe through the wound to the cavity of the bladder, to detach the particle of stone which may be sticking to its mucous membrane.

SECTION II.

ON THE DIRECTION AND THE EXTENT OF THE INCISION OF THE
PROSTATE GLAND.

A DIFFERENCE of opinion can scarcely arise respecting the proper direction of the incision of the prostate. By dividing its left lobe obliquely outwards and downwards, there will be a correspondence between the incisions of the outward and inward parts, which must be favourable for the extraction of the stone, and for the free discharge of the urine : and it may be added, that an incision of the prostate cannot be made in any other direction with so little risk of injury to the pudendal artery or to the rectum.

In the preceding pages it has been stated that the incision of the prostate should permit the easy passage of the finger into the bladder. Such an extent of incision is usually sufficient. There would be no practical good in specifying the largest size of a stone, which has been successfully drawn through an incision of the prostate confined to its left lobe, because the

facility of extracting the stone, must depend on the readiness with which the prostate and neck of the bladder may yield, and this will vary in different instances, and at different periods of life. In the young subject, the prostate will yield more readily than in the adult, and the induration of the prostate, frequently present in advanced age, is obviously an unfavourable circumstance. An appeal might be made to the successful experience of some of our best operators who use a gorget, cutting only one side of the prostate, were it necessary to prove that this extent of incision is usually sufficient: and in instances wherein I have examined the parts concerned in the operation, which had been performed a short time before death, the gorget used in one case, and the knife in another, had not in either, completely divided the left side of the prostate, yet the incision had been sufficient for the extraction of a large stone.

In a case of an unusually large stone, it is better to determine upon the incision of both sides of the prostate, whereby an increase of space will be obtained, which is to be measured, not merely by the increased extent of the incision, but by the greater facility with which the neck of the bladder will then yield to the pressure of the forceps, than when one side of the prostate only has been divided. But the stone may be so large that even with the incision of both sides of the prostate, its ex-

traction cannot be safely attempted ; the desirable object will then be to break it, which might possibly be effected by a pair of strong forceps with much projecting teeth, but it would be necessary in such a case to be provided with the instrument which has been contrived by Mr. Earle for this purpose, a description of which will be found in his paper entitled "Remarks on the Danger of extracting Large Calculi," in the eleventh volume of the Medico-Chirurgical Transactions.

An exclusive preference is not to be given to the gorget or to the knife for the incision of the prostate. With either instrument, skilfully used, the operation may be well done. With a gorget, properly constructed, there is no risk of wounding the pudendal artery or the rectum, because the limits of the incision are determined by the dimension and form of the instrument. With a knife, in an inexperienced hand, there is not so much certainty of confining the incision within its proper limits.

A comparison of the gorget with the knife, so far instituted, is favourable to the former ; but to the narrow-bladed and beaked knife, first used by Mr. Blizzard, an advantage belongs, which a gorget, from the width of its blade, cannot possess. The knife enters the bladder, as Mr. Blizzard was accustomed to remark, as easily as a probe. The gorget, on the other hand, must meet resistance in passing through the prostate. Very much less, however, will this resistance be than it has

been usually represented when the gorget has been properly made, and it is guided with skill.

For the young subject, or for a thin adult, the knife is especially suited. It is also to be preferred for any case in which the bladder is closely contracted upon the stone. But for a very fat, or for an old subject, in whom, by the enlargement of the prostate, or the dilatation of the rectum, the bladder is raised much above its natural situation, the gorget is better adapted, on account of the great distance from the perineum at which the prostate and neck of the bladder are, in such instances, situated.

Other methods of dividing the prostate, and other instruments for doing it, have been recommended: doubtless, some of these are good; but, for the mention of them here, consistently with my present object, it would be necessary for them to be better than those which have been described, and I have not been able to satisfy myself that they are so.

SECTION III.

ON THE CONSTRUCTION OF INSTRUMENTS FOR THE OPERATION.

Of the Sound.—To meet the various circumstances of difficulty in discovering a stone in the bladder, sounds must be provided varying in length, thickness, and in the degree of their curve. For a contracted bladder, a sound, the curve of which is short, and forms part of a small circle is best suited; its point can be moved freely so as to touch every part of the internal surface of the bladder, and being turned downwards, it may touch a stone which may be situated below and behind the prostate when other instruments have failed. A sound should lie loosely in the urethra, that its point may move freely within the bladder; but the urethra contracting upon the instrument may impede the movement of its point, which may be to a certain extent obviated by the use of a sound of less than the usual thickness.

Of the Staff.—Formerly the curvature of the staff was directed not so much to the facility of its introduction as to the projection of its most convex part in the perineum, but as it is not intended to open the spongy portion of the urethra,

the projection of the staff is not wanted as a guide for the first incision. In plate 1. is the representation of a staff which may be passed to the bladder with facility; and, provided that the urethra has been opened in the right situation, the small portion of the groove of this staff, along which the beak of the knife or gorget will be conducted, is so little curved, that the difference between it and a straight staff can scarcely influence the precision with which the operation may be completed.*

The further directions respecting the staff are, that it should be as thick as the size of the urethra will permit, that its groove may be wide and deep; and at its extremity, the groove should be closed. It is true that the beak of the knife or gorget usually slips out of the groove as soon as it enters the bladder; but should this not happen, with a staff having a closed groove, there will be no risk of wounding the part of the bladder with which the end of the instrument may be in contact.

Of the Gorget.—The handle of the gorget has been usually turned downwards to facilitate the passage of the forceps over it; but this is unnecessary. A straight gorget is preferable, because it can be guided with more convenience and precision. A gorget, the blade of which is horizontal, may be so

* I owe to the politeness of Mr. Key an opportunity of witnessing his dexterous use of the straight staff in a boy upon whom he operated in Guy's Hospital.

held, in passing it through the prostate, that the incision of the gland will be obliquely outwards and downwards, but it is better to adapt the form of the blade to the direction of the incision it is designed to make. The gorget should be double-edged, that it may cut both sides of the prostate, as the neck of the bladder will then yield far more readily than when an incision of the same extent has been confined to one side of the gland. A double-edged gorget is also preferable from the greater facility with which it will pass through a firm prostate. Both edges of the gorget should be turned obliquely downwards to the extent that each edge will form, with the beak, an angle of forty-five degrees. The beak of the gorget should be so placed that two-thirds of the incision of the prostate will be through its left side, in order that the larger share of the incision of the gland may correspond with the incision of the outward parts. With a gorget thus constructed, the blade of which is an inch wide, the left side of the prostate will be divided nearly in its whole length and breadth, and the right side, to half this extent. A straight and double-edged gorget, properly set, in respect to the facility with which it will pass through the prostate is justly represented as a double edged scalpel.*

* The gorget here described resembles in some points that which was used by the late Mr. Trye of Gloucester.

Of the Beaked Knife.—It is only necessary to allude to the necessity of having the beak of the knife exactly adapted to the groove of the staff. The length of the beak should correspond with the depth of the groove, in order that the edge of the knife, in any position of it, may be close to, but not in contact with, the edge of the staff.

It may be well to notice, that in cases where there is an unusual depth of fat in the perineum, or an enlargement of the prostate gland, all the instruments should be longer than usual. In an instance of enlarged prostate, the urethra measured eleven inches between its external orifice and the bladder. Here, therefore, a staff fourteen inches in length would be required, and the other instruments in proportion to it. The prostate, with its enlargement in advanced life, usually acquires a firmness of texture equal to that of the hardest gizzard, which will make the incision of the gland difficult; and from the indisposition of its sides to yield, the separation of the blades of the forceps to the requisite extent will be greatly resisted. For a case of this kind, the blades of the forceps should be longer than usual, and the handles should be constructed upon the plan recommended by Assalini, which it is unnecessary to describe, as the instrument-makers are generally provided with them.

EXPLANATION OF THE PLATES.

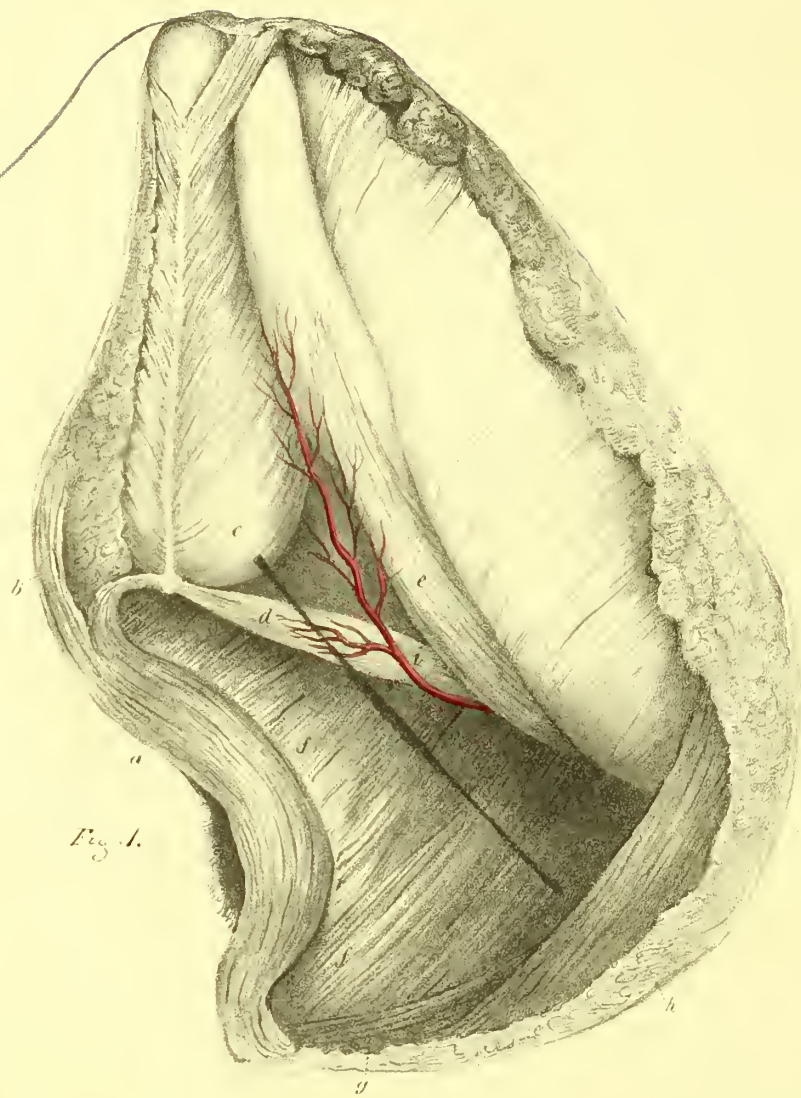


Fig. 1.

Fig. 2.

PLATE I.

FIG. 1.

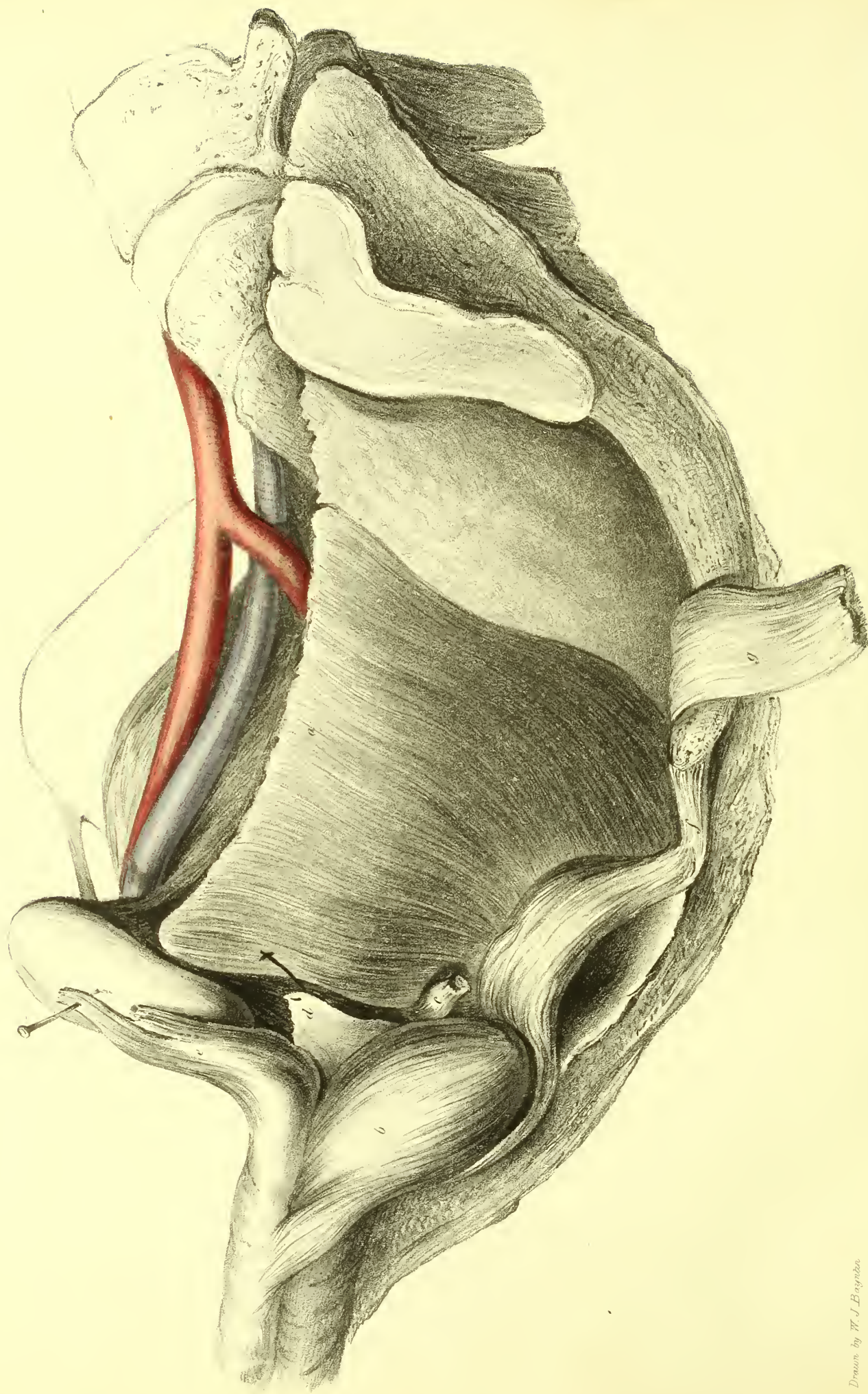
A FRONT VIEW OF THE MUSCLES IN THE PERINEUM.

- a*, The sphincter ani.
- b*, Fibres of the sphincter terminating in the subcutaneous cellular tissue.
Other fibres of the sphincter are continued to the junction of the accelerator and transversus muscles.
- c*, The accelerator urinæ.
- d*, The transversus.
- e*, The erector penis.
- ff*, The levator ani.
- g*, The coccygeus.
- h*, The edge of the glutæus maximus.
- i*, The perineal artery.

A dotted line represents the first incision in the lateral operation. The upper part of this line is in front of the bulb ; but in making the subsequent incisions, the bulb will be pressed to the right side, away from the scalpel, by the left fore-finger.

FIG. 2.

A representation of the curve of the staff, for the adult. It has been a little shortened in the handle.



Drawn by W. J. Baylis

On Stone by Tho. Fairland

PLATE II.

A LATERAL VIEW OF THE MUSCLES IN THE PERINEUM.

- a*, The levator ani.
- b*, The accelerator urinæ.
- c*, The transversus, detached from its origin.

It will be observed, that a part of the front edge of the levator ani is in contact with the fibres of the accelerator urinæ, and that the membranous portion of the urethra, concealed from view by the levator ani, cannot be opened without dividing some fibres of this muscle.

- d*, The portion of the triangular ligament which has been detached from the left os pubis. It is elevated by a hook. The triangular ligament being situated immediately behind the bulb, will be in part divided by the scalpel in its progress to the membranous portion of the urethra.
- e*, The left crus penis.
- f*, The dense cellular tissue by which the sphincter ani is attached to the coccyx.
- g*, The coccygeus muscle detached from the spine of the ischium.

On Stone by Tho' Fairland,

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PLATE III.

A FRONT VIEW OF THE VISCERA OF THE PELVIS, AND OF THE MUSCLES IN THE PERINEUM.

This view was obtained by passing a scalpel immediately behind the ossa pubis, directly downwards through the membranous portion of the urethra and the rectum, and then removing all the parts anterior to this section.

- a a*, The acetabula.
- b*, The ramus of the left ischium.
- c c*, The posterior sacro-ischiatic ligaments.
- d*, The coccyx.
- e*, The bladder.
- f*, The urethra emerging from the apex of the prostate.
- g*, The right ureter.
- h*, The right vesicula seminalis.
- i*, The cut edge of the rectum.
- j j*, The coccygei muscles.
- k*, A part of the left levator ani.
- l*, The pudendal artery, in its progress across the obturator internus muscle, to the ramus of the ischium.
- m*, Cellular tissue between the vesicula seminalis and the rectum.

In this view of the parts concerned in the lateral operation, the following points may be especially noticed.

The pudendal artery, its distance from, and its relation to, the side of the prostate. To pass a ligature around the artery, should it have been wounded

EXPLANATION OF THE PLATES.

in the lateral operation, the incision may require to be continued backwards to the ischiatic ligament.

The termination of the ureter in the bladder, its relation to the side of the prostate.

The vesicula seminalis, its relation to the side of the prostate.

The levator ani, its application upon the side of the prostate. Besides the levator ani, a layer of fat, of varying thickness, and the fascia covering the obturator internus muscle, intervene between the side of the prostate and the pudendal artery.

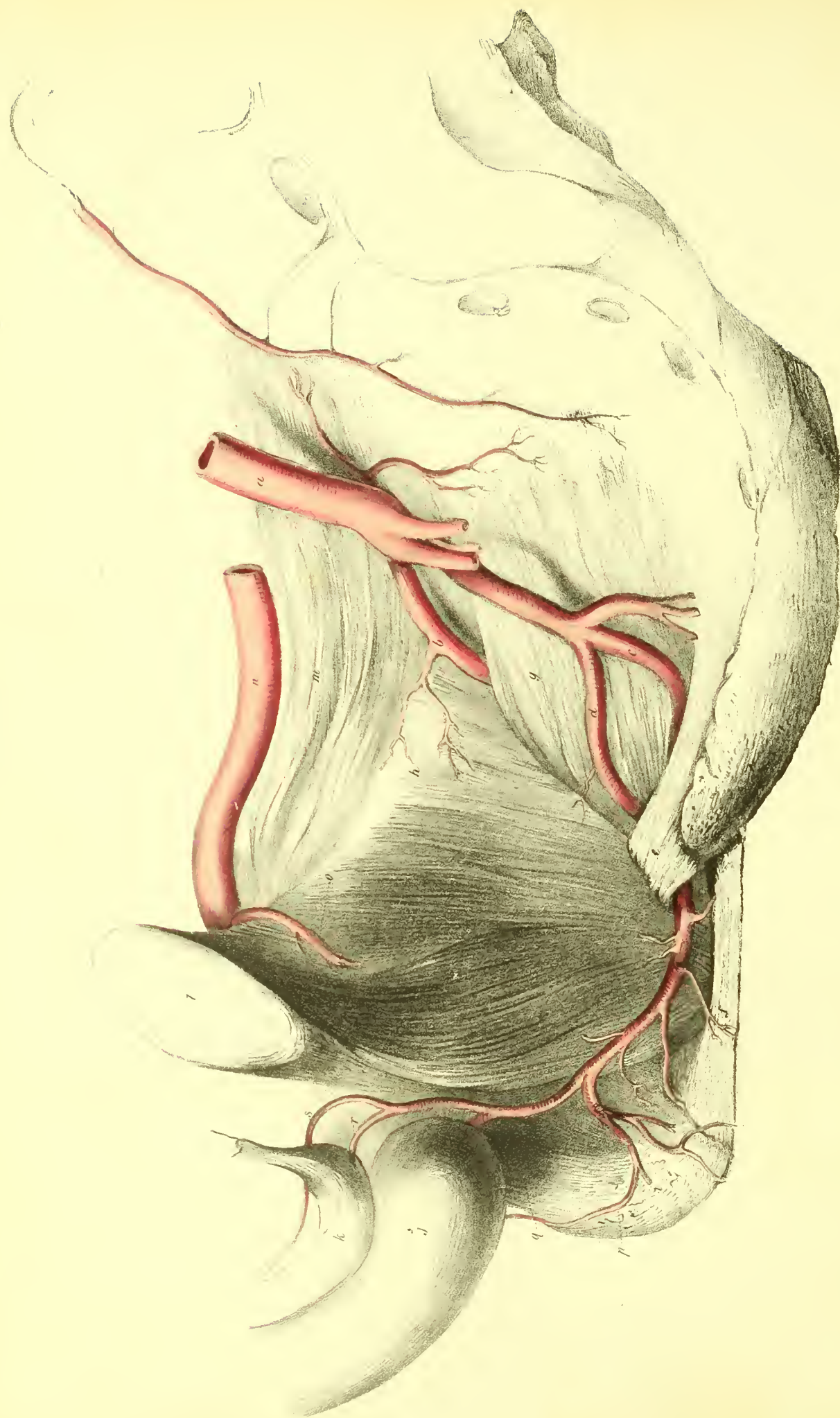


PLATE IV.

A REPRESENTATION OF THE COURSE OF THE PUDENDAL ARTERY AND ITS BRANCHES.

- a*, The internal iliac artery.
- b*, The glutæal artery.
- c*, The ischiatic artery.
- d*, The pudendal artery.
- e*, The anterior sacro-ischiatic ligament.
- f*, The posterior sacro-ischiatic ligament.
- g*, The pyriformis muscle.
- h*, The obturator internus muscle.
- i*, The tuber ischii.
- j*, The corpus spongiosum.
- k*, The left crus penis.
- l*, The right os pubis.
- m*, The psoas muscle.
- n*, The right external iliac artery.
- o*, The obturator artery, which in this instance arose from the external iliac.
- p*, The perineal artery.
- q*, The artery of the bulb.
- r*, The artery of the corpus cavernosum.
- s*, The superficial artery of the penis.

Fig. 1.



Fig. 3.

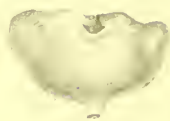


Fig. 2.



Fig. 4.



Fig. 5.



PLATE V.

FIG. 1.

A REPRESENTATION OF THE ARTERY OF THE BULB DEVIATING FROM ITS USUAL ORIGIN AND COURSE.

- a*, The left levator ani.
- b*, The left half of the triangular ligament. The pelvic surface of the ligament is here viewed, in consequence of the bulb having been drawn upwards and to the left side.
- c*, The inferior edge of the triangular ligament drawn upwards with the bulb.
- d*, The artery of the perineum.
- e*, The artery of the bulb.
- f*, The artery of the penis ascending upon the ramus of the ischium.

The artery of the bulb, in this instance arising from the pudendal at a greater distance from the bulb than usual, proceeds along the pelvic surface of the triangular ligament, and just above its inferior edge. Here, therefore, the artery of the bulb would have been divided in the lateral operation

FIG. 2.

A representation of the size of the prostate gland at the age of four years.

FIG. 3.

A representation of the prostate gland at the age of twelve years, showing the small size it retains to the period of puberty.

EXPLANATION OF THE PLATES.

In performing the lateral operation upon the young subject, it is necessary to recollect the small size which the prostate retains to the period of puberty, that there may be no risk of extending the incision of the gland beyond its proper limits. It may seem that an incision which is confined to the left lobe of the prostate in the young subject, cannot be sufficient for the extraction of even a small stone ; but it is to be recollected that the small extent of the incision in the young subject is compensated by the facility with which the parts will yield to the gentlest pressure.

FIG 4.

A front view of the triangular ligament, showing its extent, and its attachment to the under part of the symphysis, and to the rami of the ossa pubis, also the form of its inferior edge, and the aperture in its centre from which the urethra has been removed.

FIG. 5.

A lateral view of the bladder and rectum from a boy aged six years, upon whom the lateral operation had been performed a fortnight before death.

The wound is only in part healed. A bristle has been passed through it into the bladder.

It will be observed, that by the operation, a direct channel is formed between the perineum and the bladder ; that the urethra has been opened in its membranous portion, and at a little distance from the bulb ; and that the outward incision has been made between the bulb and the crus penis. The incision of the prostate was made by a single-edged gorget, and it extends through two thirds of the left side of the gland.

a, The left crus penis.

b, The bulb.

c, The opening in the urethra, commencing a little behind the bulb.

d, The left vesicula seminalis.

e, The left ureter.

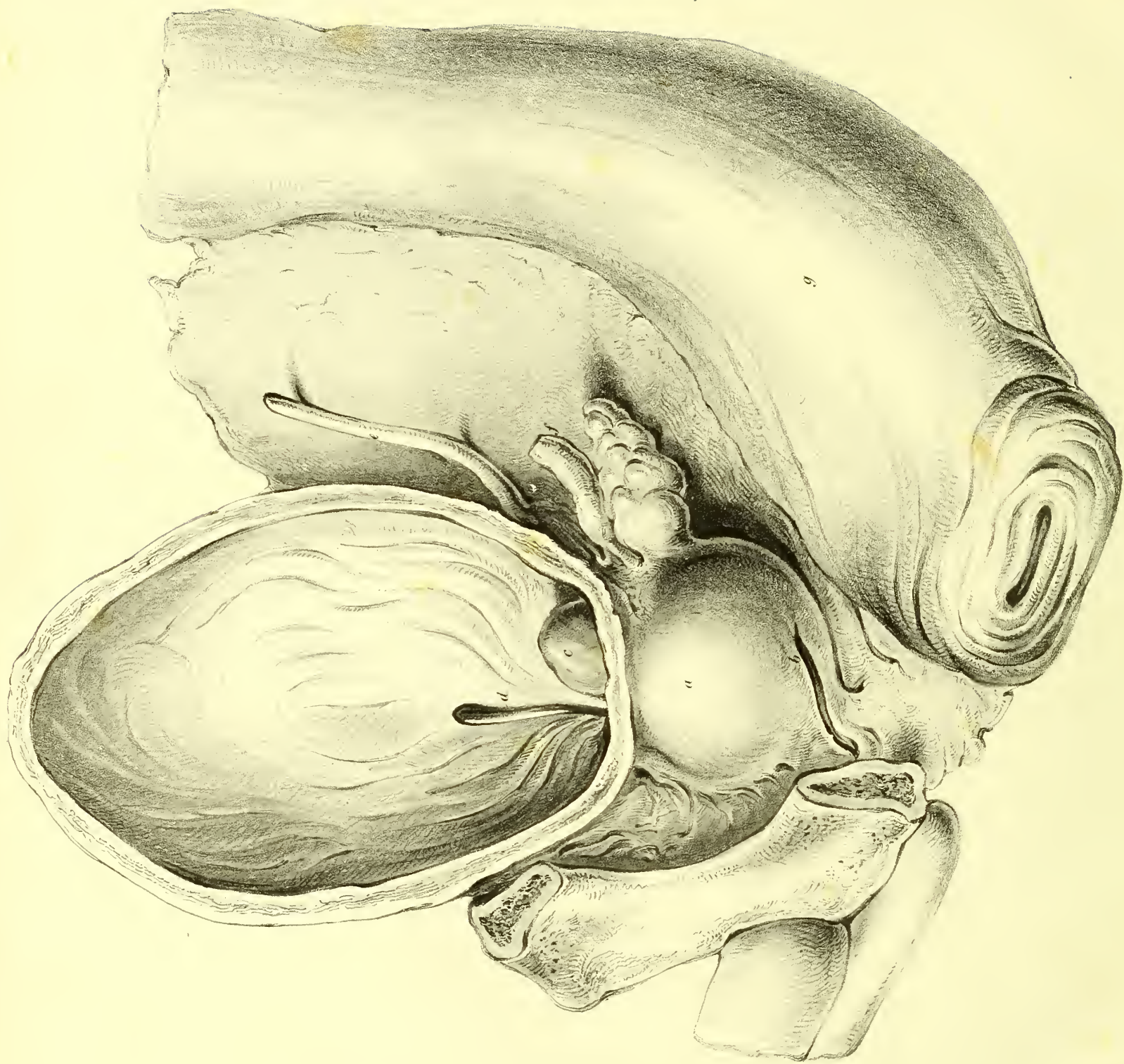


PLATE VI.

A LATERAL VIEW OF THE BLADDER AND RECTUM, FROM AN OLD SUBJECT.

- a*, The prostate gland larger than naturally.
- b*, An incision of the prostate made by a gorget.
- c*, A portion of the prostate projecting into the bladder immediately behind the orifice of the urethra.
- d*, A probe passed from the bladder into the urethra.
- e*, The left ureter.
- f*, The left vesicula seminalis and vas deferens.
- g*, The lower part of the rectum considerably dilated.

In trying differently-formed gorgets upon the dead subject, I happened to perform the operation upon the subject from whom the parts here represented were taken. Having withdrawn the gorget, I passed my finger through the prostate, but could not reach the bladder. Then, dissecting the organs, I found the lower part of the rectum much dilated, the prostate enlarged, and the bladder raised much above its natural situation.

If, in this individual, the lateral operation had been performed, the rectum, from its dilated condition, would have been exposed to injury; and although, with a knife or gorget of a sufficient length, the incision of the prostate might have been adequately made, yet, from the finger not reaching the bladder, the extraction of calculi would have been difficult, and especially so, if, as usually happens with the enlargement of the prostate, there had been many small calculi in the bladder. Here, then, was a combination of circumstances unfavourable for the lateral operation, indeed for any other mode of opening the bladder than above the pubes.

EXPLANATION OF THE PLATES.

In subjects of an advanced age, a deep perineum, as it is termed, is frequently met with. This may be occasioned either by an unusual quantity of fat in the perineum, or by an enlarged prostate, or by the dilatation of that part of the rectum which is contiguous to the prostate and bladder. Under either of these circumstances, the prostate and bladder become situated higher in the pelvis than naturally, and, consequently, at a greater distance from the perineum. In an instance of this kind, the lateral operation was performed by an experienced surgeon, who was not prepared to find the prostate and bladder so deeply situated, and he was in consequence compelled to continue the incisions more deeply, after he had supposed that they reached the bladder.

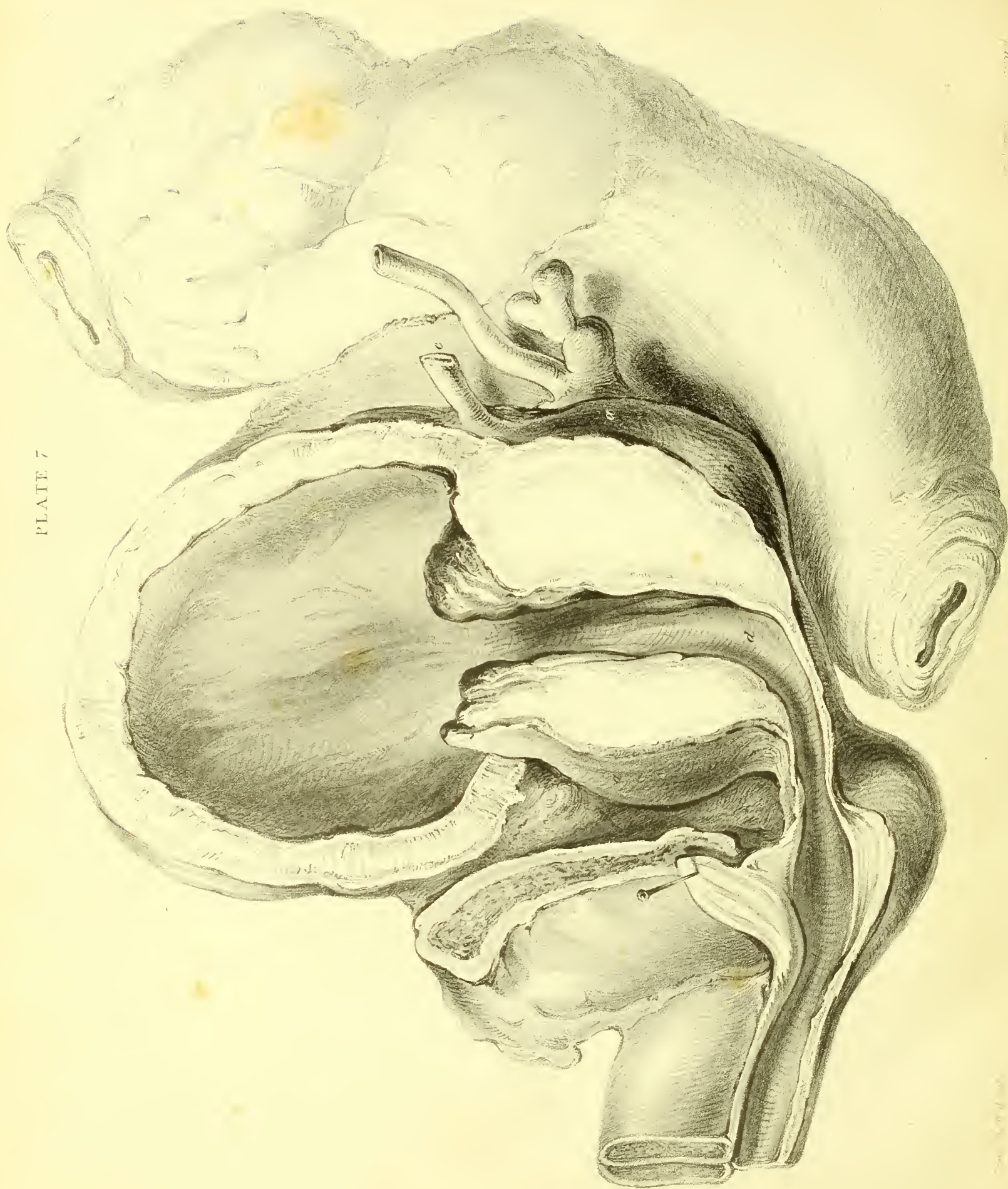


PLATE VII.

A LATERAL VIEW OF THE BLADDER AND OF THE RECTUM, FROM AN OLD SUBJECT.

The prostate is greatly enlarged, and the coats of the bladder are exceedingly thick. The enlargement of the prostate has occasioned the elevation of the bladder to the extent that it is almost completely above the ossa pubis. The section of the prostate displays the increased length, and the altered direction of the urethra within the gland. The measure of the urethra between the orifice of the glans and the orifice of the bladder was eleven inches. It will be well to remark the sudden turn which the urethra makes on entering the prostate, and its further progress directly upwards to the cavity of the bladder, with a view to the sort of curve a silver catheter would have required in this case. Above thirty small calculi were found in the bladder.

- a a*, The circumference of the prostate.
- b*, The lower and posterior part of the prostate pressing against the rectum.
- c*, The left ureter.
- d*, The urethra traversing the prostate.

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